Market Analysis Program (MAP)

Industry Sector Markets 1988-1993

Utilities Sector

INPUT®

1280 Villa Street, Mountain View, CA 94041 (415) 961-3300

APRIL 1989

INDUSTRY SECTOR MARKETS 1988-1993

UTILITIES SECTOR

INPUT®

1280 Villa Street, Mountain View, California 94041-1194 (415) 961-3300

Published by
INPUT
1280 Villa Street
Mountain View, CA 94041-1194
U.S.A.

Market Analysis Program
(MAP)

Industry Sector Markets, 1988-1993
Utilities Sector

MVRT-UT • 414 • 1989

Table of Contents

Exhibits

I

Introduction

A

Overview

INPUT analyses utilities as a vertical industry-specific market including the electric, gas, and water/sewage/waste disposal segments.

- Electric utilities include those that are investor-owned, cooperatives, municipality-owned, federal-owned, and state projects/power districts.
- Gas utilities consist of three primary types of companies: transmission, distribution, and local companies.
- Water/sewage/waste disposal utilities include public or municipality-owned utilities, privately- owned utilities, and sewage/waste disposal companies.

Telephone and cable television services are discussed as part of the communications vertical market.

The market delivery modes considered in this report for utilities information services include:

- Processing services
- Network services
- Application software for personal computers, workstations, and mini or mainframe computers
- Turnkey systems
- Systems integration
- Professional services

B

Industry Trends

State and regional trends are changing the status of local utilities from monopolies to more conventional businesses. There has been an extreme emphasis on becoming competitive. This emphasis has made it increasingly important for the information systems function to provide support to the long-term strategic goals of the utility.

In order to remain profitable in times of competitive pressure, many utility companies are starting to diversify into other areas.

- Baltimore Gas & Electric has successfully moved into the area of real estate and investments.
- Potomac Electric has expanded into leasing.
- Florida Power and Light is expanding into the areas of insurance, agribusiness, real estate, and cable television.

With increasing deregulation by the federal government, the utilities are under increasing pressure to provide services in a more cost-effective and efficient manner.

- Many utilities are implementing flexible billing systems to provide more responsive rates to consumers.
- Utility companies are using automated customer services systems to improve their customer service image.

Many states are allowing the utilities to sell bulk amounts of electricity to areas outside normal service territory, allowing the utility to lower rates within the service territory.

Utilities are trying to expand product offerings and become more profitable by introducing cable television services as part of the utility package to customers.

C
Driving Forces

Many of the forces effecting the utility industry today manifested themselves over the past several years, but are now increasing in intensity.

Government deregulation of prices for electricity and gas are adding pressure to the utilities to produce and market products and services more effectively. This pressure, coupled with the regulation of yield on equity for the utilities, is limiting the return they can earn on their investment, and is making power a buyer's market. The following are some of the major forces influencing the industry.

- Some states are allowing utilities to sell gas and electricity outside of their area.
- State utility commissions are separating rate adjustments into the costs of producing power and the cost of transmitting power.
- Regulation of return on equity limits the profit that the utility can expect while supplying services to customers who are free to shop for their power.

The costs of building and maintaining nuclear power plants continue to be a major problem to utility companies. Once the plants are operational, there is a continuing need to maintain records and equipment to protect the initial investment.

- Initial costs to build new plants are continuing to rise yearly as building regulations increase.
- Maintenance records on the equipment, as well as exposure and other work-related records on personnel, are under close scrutiny by the Nuclear Regulatory Commission.

Cogeneration of power has become a major force in the utility industry as many private and public companies are producing electric power to sell back to the utility as a by-product of their process and as a way to reduce costs.

- By law, this power must be repurchased by the local utility at comparatively high rates.
- The number of companies filing with the Federal Energy Regulatory Commission for approval to cogenerate power will increase to over 2,000 by 1990.

Mergers and acquisitions are increasing as the thrust to provide services in a cost-efficient manner demand more from the utilities. Utilities with excess supplies of power are merging with neighbors with growing needs for power to supply to existing customers. Utilities are attempting to counteract the effects of price deregulation, return on equity regulation, cogeneration, and the cost of building new (especially nuclear) power plants.

- Utilities are operating under the threat of acquisitions by outside investors. These investors then operate the utility as a public company with profit and loss responsibilities.

EXHIBIT I-1

UTILITIES SECTOR—DRIVING FORCES

- Government deregulation/regulation of utilities
- Costs of building/maintaining nuclear power plants
- Cogeneration of power
- Mergers and acquisitions

D

Issues for Vendors

To meet the demand to operate "smarter" and to contain costs, vendors are being called upon to support the utility companies in their efforts to survive.

- Systems are needed that will provide management control and dissemination of information throughout the utility organization. These systems will be controlling the power and water networks as well as monitoring and forecasting future requirements.

- The demand for water supply monitoring systems is becoming more important as the demand for water increases and the use of multiple sources complicates the supplying of these needs by the local utilities.

Cogeneration and alternative energy suppliers will require the development of new types of control and monitoring systems specific to these delivery modes.

- Cogeneration companies will require systems that address the control and monitoring of power produced by the industrial sector and sold to the utility companies.

  - Monitoring systems will keep track of the power required, the power cogenerated, and the amount required by the utility to meet customer needs.

  - Specialized billing and accounting systems will also be needed on the part of the utility and the cogenerating company to account for this transfer of energy.

- Alternative energy suppliers, such as the trash to power systems, will also require new and specialized systems to monitor the consumption of fuel and the regulation and distribution of power produced.

Grid generation and control will continue to be a major area for vendors to concentrate. As power is obtained from multiple sources, the coordination of these sources continues to present new and unique information requirements.

- Brown-out control will be accomplished by grid monitoring systems that identify the unfulfilled need for power and redirect power from other sources. This will be especially important during the critical use months of the summer or during low production periods at other plants.

- Systems will be required to monitor the least cost sources of power and accommodate the billing of distributors by the power grid generators.

All of the previously mentioned systems have dealt with the provision of utility services to customers. The overhead monitoring and accounting for these services after they are provided to the customer will also be important for several reasons.

- Utilities will need to interface with the consumers in a more automated fashion that will contain the overhead costs of the customer accounting segment of service.
  - Automated meter-reading is proving to save many hours of overhead time and producing much more accurate accounts.
  - Customer data bases are being integrated to supply usage, billing, and service functions.
  - Data bases are becoming valuable repositories of information on consumption of energy by customers to forecast future needs.

EXHIBIT I-2

VENDOR ISSUES

- Cost-containment systems
- Cogeneration/alternative energy sources
- Grid control
- Customer service/billing

E

Issues for Information Systems (IS) Departments and Vendors

All of the strategic issues facing the IS department deal with supporting the company in a changing business environment. The IS department is taking a more proactive role in supporting company strategy through the use of technology to increase productivity throughout operations and administrative functional areas.

- Programs are required to support distributed processing, applications, and productivity tools in the hands of the end users.
- IS must support the cost-containment programs of the organization with high productivity, the development of cost-based systems, and the delivery of systems in a shorter timeframe than in the past.

The utility companies have made various attempts at automation over the last decade. Batch processing of accounting files and invoice production has been done since the 1970s. These attempts are now being solidified into integrated systems to provide more efficient support.

- Relational data bases to process customer information and provide comprehensive service and marketing information are being implemented by many utilities.

- Personnel, process, and maintenance tracking/scheduling is becoming more organized and efficient as scheduling programs takeover and integrate all of these functions into a cohesive plan.

As the IS department becomes an integral part of the utility company, there is a need to hire, develop, and keep good quality people to support IS. The need for competitiveness in salary and benefits is becoming paramount to the IS department. Skilled workers demand the latest in computer hardware and software to assist them in their job, and want the opportunity to do more than just maintain the existing systems. The utilities companies in order to attract and retain good MIS people must pay slightly higher salaries for the top people. This translates to salaries 11% above the average for IS people in utility companies based on a recent independent study of industrywide IS salaries.

EXHIBIT I-3

IS DEPARTMENT ISSUES

- Support company strategy
- Provide integrated systems
- Retain qualified productive personnel

II

Market Forecasts

A

Introduction

INPUT divides the utility market into three segments:

- Electricity
- Gas
- Water and waste disposal

The SIC (Standard Industrial Classification) for this market sector is 49 (491-497), which includes:

- Electric services
- Gas production and distribution
- Combination electric and gas and other services
- Water supply
- Sanitary services
- Steam supply
- Irrigation systems

The number of utility companies in the U.S. in 1987 is shown in Exhibit II-1, and the number of utility company employees as of 1987 is estimated in Exhibit II-2.

With the thrust to remain competitive and hold-off hostile takeovers, as well as to provide the best service possible, all but the very smallest utility companies are now seeking some degree of automation. The smaller companies can make use of software packages that will help them maintain customer records and calculate monthly invoices.

Administrative computing needs at utility companies are fairly homogeneous. Maintaining customer records and invoicing are similar at electric, gas, and water/waste utilities. Operations computing requirements are fundamentally similar, with the key exception being government regulatory reporting requirements for nuclear power plants.

EXHIBIT II-1

NUMBER OF UTILITIES IN U.S. BY TYPE 1987

Type	Number of Utilities
Electric*	
• Investor-owned	205
• Cooperatives	937
• Municipalities/publicly-owned	1,812
• Federal-marketing agencies	7
• State projects/power districts	157
Total - Electric Utilities	3,118
Gas**	
• Transmission	150
• Distribution (utilities)	450
• Municipal companies	735
Total - Gas Utilities	1,335
Water ††	
• Public/municipalities	18,000
• Private ownership	6,000
Total - Water Utilities	24,000
Sewage and waste disposal ††	
• Sewage services	5,100
• Combined services	500
Total - Sewage and Waste Disposal Utilities	5,600
Grand total	34,053

*Source: Edison Electric Institute

**Source: American Gas Association

†† Source: Sales and Marketing Management Magazine

EXHIBIT II-2

NUMBER OF EMPLOYEES BY TYPE OF UTILITY, 1987

Utility	Total Employees
Electric (491)	680,000
Gas (492) (Production and distribution)	230,000
Combination utility services	108,000
Water	104,000
Sanitary services	125,000
Total	1,247,000

Utilities are built and tailored to the needs of the people they serve. With each utility being unique in the approach by which it conducts its business, some degree of customization is always necessary.

B

Demographic Forecast

Merger activity will continue to have an impact on the number of electric utilities over the next five years, leading to continued small declines in the number of utilities.

- Competition from alternate power sources, such as wind and solar, and other providers will continue to force utilities to become more efficient.
- Maximum utilization of existing facilities may require some consolidation to meet the changing demands on the utility.
- The small- and medium-sized utilities will be most effected by these changing demands and will merge or consolidate resources to be able to efficiently meet the requirements of their customers.

The number of gas utilities will remain fairly constant, with a few mergers or acquisitions among the small- and medium-sized companies.

The number of water districts will also remain constant, assuming a minimum of merger and acquisition activity.

The number of combined sewage and waste disposal operations will increase very slightly as more municipalities address the disposal of waste in an environmentally safe manner.

C

Total Industry Forecast, 1988-1993

INPUT estimates that utility sector expenditures for information services contracted with outside vendors will reach $2.2 billion in the U.S. in 1993. This is an 18% compounded annual growth rate through 1993, increasing from $960 million in 1988.

The market will be dominated by the professional services and systems integration firms that will account for over 62% of the expenditures in the utility sector. Application software products will account for the next major portion with 19% of the expenditures. Processing services, network/electronic information services, and turnkey systems will account for the remaining 19%.

- The expenditures for in-house staff to produce new software systems and enhancements is not included in this forecast. Only the services and applications purchased from outside vendors are considered as part of this forecast.

Market size and growth rates are shown in Exhibits II-3, II-4, and II-5.

The systems integration sector growth of 32% reflects the trend of the industry to build large integrated systems to monitor and control utility systems.

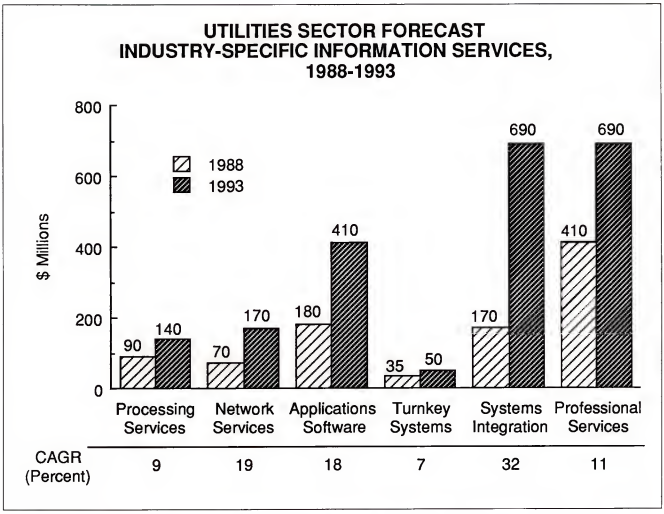
- Many of the utilities are trying to be cost efficient in their updating of IS by utilizing their existing fragmented data bases and integrating them into higher-level, more sophisticated systems.

Network information services will exceed the industry growth rate with a compounded annual growth rate of 19%. These services include the increasing number of data bases of regulatory and scientific information and issues that are utilized by the utility companies to control the processes of building new power plants to operate at peak efficiency.

- The advent of energy pools will increase the amount of electronic information flow between transmitters and distributors of energy resources, including electricity and gas.

- Water utilities have recently begun to consolidate into pools to plan and monitor the use of water by large metropolitan areas.

EXHIBIT II-3



Application software products will see the increased use of packaged solutions as more of these applications are being developed by vendors involved this area.

- Many utilities are bringing the processing of data down to the workstation level with distributed processing and the increased use of LANS in administrative and operations functions.

Other delivery modes are running slightly below the sector average reflecting the maturity of these modes and the services that they provide.

- Turnkey systems will see a steady growth of 10% reflecting the continuing preference for turnkey solutions, in favor of the customized software professional services and systems integration solutions. Microcomputers, with increased power capability, are providing less expensive turnkey solutions than seen in the past.

EXHIBIT II-4

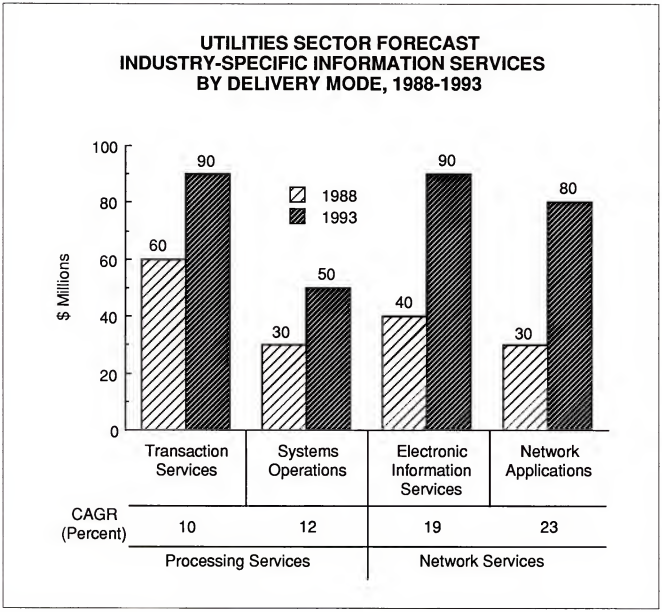
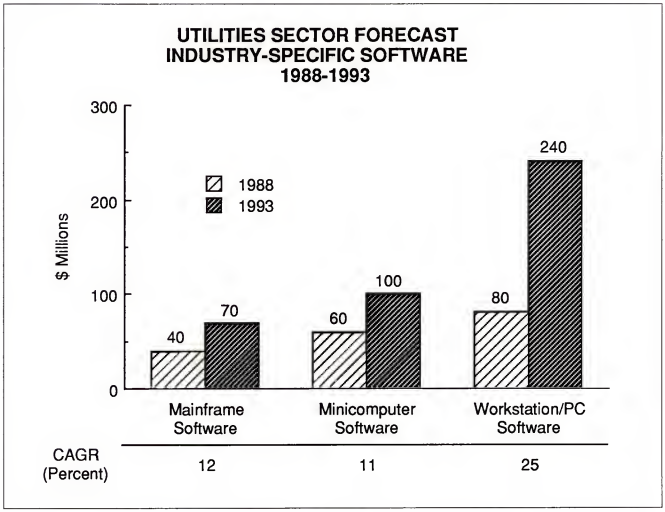


EXHIBIT II-5



III

Competitive Developments

Recent trends have indicated a need for specialized software and information systems for the utility industry. Many vendors are concentrating in specific areas of system needs, such as radiation monitoring data bases and maintenance information data bases. As the utilities become more involved in information technology, they are recognizing the need for systems that will monitor systems, monitor regulations, and share information, on-line, in an efficient manner.

- One of the emerging areas of utility monitoring is that of radiological data monitoring for nuclear power plant personnel. This system monitors and tracks personnel and the frequency and amount of time spent in high radiation areas. This type of control system is mandated by the Nuclear Regulatory Commission as necessary for the operation of a nuclear power plant.

In the area of electronic data interchange (EDI), utility companies are using existing networks as a means to invoice customers and purchase supplies and services.

- Georgia Power (Atlanta) has been instrumental in the development of systems to invoice large customers and purchase supplies using EDI.

- Consumers Power (Jackson, MS) uses EDI for invoicing and for EDI/ EFT (EDI/ Electronic Funds Transfer) invoice payments, particularly with railroads which are large, multipoint electricity users who normally receive thousands of monthly invoices.

- American Electric Power Company (Columbus, OH) is using EDI in purchasing operations.

EDI is viewed as a means of connecting independent power companies to power pools. The need for these arrangements will increase due to

deregulatory trends instituted by the Federal Energy Regulatory Commission which encourages competitive bidding among power generators. EDI would be used for the competitive bidding process.

- The New York Power Pool, formed in 1978, uses a computer-assisted economic dispatch and automated control system to monitor regional demand for power and route the least expensive power as required. Real-time data is collected from power-generating plants in the Midwest, Atlantic states, New England, and Canada.

The Enercom subsidiary of Equifax markets several energy planning software systems that are used by the utility companies to offer additional energy planning to its customers.

- The Residential Energy Audit System, EnerGraf™, and LOAD-SHAPER™ provide assistance in analyzing and planning energy requirements.

- Other software available includes data base management for scheduling and job-tracking functions of weatherization programs and the Exchange™ System for customer "skip-accounts" analysis.

American Software, Inc. has been active in providing systems in the areas of planning, inventory management, purchasing, accounting, and work scheduling for the utilities industry. These systems are designed to help the utility increase their margins through reducing costs and increasing productivity and improve the customer service function.

The Energy Management Division of Control Data Corporation, one of the utility industry's largest suppliers of energy management control systems, has recently announced full-graphics capability for utility monitoring and control. Other recent contracts include software for on-line systems control and data acquisition, alarm processing, automatic generation control, network analysis, scheduling, data management, and operations planning. Systems will enable electric utilities to improve reliability and economy in power generation and transmission.

A list of representative vendors that provide services to the utilities industry is shown in Exhibit III-1.

EXHIBIT III-1

UTILITIES SECTOR
REPRESENTATIVE VENDORS

Vendor	Revenue ($ Millions)	Market Share (Percent)
Andersen Consulting	60.0	7.4
Arthur D. Little	43.0	5.3
E.I.International	20.0	2.5
Enercom	11.2	1.4
American Software,Inc.	9.1	1.1
Digital Systems,Inc.	6.7	0.8
Quadrex	6.0	0.7
Computer Task Group	4.5	0.6
Electrocon Int.	1.5	0.2
Subtotal	162.0	20.0
All Other Vendors	649.5	80.0
Total	811.5	100

IV

Summary

Utility companies are under increasing pressure from the government, investors, and consumers to provide their services in the most cost-efficient method possible. Consumers do not want to foot the bill for increasing overhead costs. Large industrial customers are now able to competitively buy their power and are entering the energy game themselves through cogeneration of electricity. The government has added increased pressure by deregulation of the utilities, while continuing to regulate the price increases that can be passed on to consumers.

The four main factors that impacted utility companies' 1988 budgets were the following:

- Cost containment/reduction for overhead
- Hardware costs
- Software/systems costs
- Information system efficiencies

The information systems departments are under pressure to live within the constraints given by upper management to keep their costs down while developing into a quality service area that contributes to the overall productivity of the company. These same budget and productivity constraints are expected to carry through over the next five years.

The utility companies are depending on outside vendors to help them cope with this increased pressure to provide services.

- Of utilities surveyed for the *Information Systems Planning Report*, over 90% stated they were going to be doing over 50% of their applications work with outside companies.

These specialized applications of the utilities can differ between geographic areas as well as between the power, water, and gas sectors.

- More custom systems will be required to take existing systems and maximize them into fully functional integrated information systems. This custom scenario provides opportunities for professional services firms with presence or experience in the utility sector.

- There will be a heavy emphasis on human interface with the data generated, or making the data meaningful. Artificial intelligence will be applied to many of these areas to help interpretation.

Growth areas for vendors will include services and applications that will integrate the utility companies into larger pools as well as make each individual utility as efficient as possible in the provision of service to consumers.

UT-A

Appendix: User Expenditure Forecast, 1987-1993

EXHIBIT UT-A-1

UTILITIES SECTOR
USER EXPENDITURE FORECAST
BY DELIVERY MODE, 1988-1993
($ Millions)

Sector by Delivery Mode	1987 (%)	Growth 87-88	1988	1989	1990	1991	1992	1993 (%)	CAGR 88-93
Total Utilities Sector	800	17	955	1,100	1,290	1,535	1,800	2,150	18
Processing Services	75	10	90	90	110	120	130	140	11
Transaction Processing Services	50	10	60	60	70	80	80	90	10
Systems Operations	25	12	30	30	40	40	50	50	12
Network/Electronic Information Services	50	21	70	70	90	110	130	170	21
Electronic Information	30	20	40	40	50	60	70	90	19
Network Applications Services	20	22	30	30	40	50	60	80	23
Application Software	145	20	180	220	240	290	340	410	18
Products									
Mainframe	35	14	40	50	50	60	60	70	10
Minicomputer	50	13	60	70	70	80	90	100	11
Workstation/PC	60	31	80	100	120	150	190	240	26
Turnkey Systems	30	10	35	40	40	45	50	50	10
Systems Integration	130	35	170	230	310	410	530	690	32
Professional Services	370	10	410	450	500	560	620	690	11

Note: Forecast data has been rounded.

UT-B

Appendix: Forecast Reconciliation

EXHIBIT UT-B-1

UTILITIES SECTOR
DATA BASE RECONCILIATION OF
MARKET FORECAST BY DELIVERY MODE
($ Millions)

Industry Sector	1987 Market 1987 Forecast	1988 Forecast	Variance (%)	1992 Market 1987 Forecast	1988 Forecast	Variance (%)	CAGR 87-92 1987 Forecast (%)	CAGR 87-92 1988 Forecast (%)
Total Utilities Sector	690	670	3	1,415	1,270	11	15	14
Processing/Network Services	150	125	20	255	260	-2	11	16
Application Software Products	150	145	3	380	340	12	20	19
Turnkey Systems	30	30	0	60	50	20	15	11
Professional Services	360	370	-3	720	620	16	15	11

Note: INPUT's 1987 Professional Services forecast includes systems integration software revenues.

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

INPUT OFFICES

North America

Headquarters
1280 Villa Street
Mountain View, CA 94041-1194
(415) 961-3300
Telex 171407 Fax (415) 961-3966

New York
280 North Central Avenue, Suite 303
Hartsdale, NY 10530-1894
(914) 682-8880 Fax (914) 682-8479

959 Route 46 East, Suite 201
Parsippany, NJ 07054
(201) 299-6999
Telex 134630 Fax (201) 263-8341

Washington, D.C.
8298 Old Courthouse Road
Vienna, VA 22182
(703) 847-6870 Fax (703) 847-6872

International

Europe
Piccadilly House
33/37 Regent Street
London SW1Y 4NF, England
(01) 493-9335
Telex 27113 Fax (01) 629-0179

Paris
29 rue de Leningrad
75008 Paris, France
(16) 44-80-48-43
Fax (16) 44-80-40-23

Japan
FKI, Future Knowledge Institute
Saida Building,
4-6, Kanda Sakuma-cho
Chiyoda-ku,
Tokyo 101, Japan
(03) 864-4026 Fax (03) 864-4114